

What is claimed is:

1. An electrochemical cell system comprising:
opposed planar electrode members composed of a polymeric matrix composition; and
an interposed planar separator member;
wherein said separator member is a matted fiber paper.
2. The system of claim 1, further comprising a sufficient amount of a plasticizer compatible with said polymeric matrix composition to lower the inherent flow temperature of said polymeric matrix composition and render said polymeric matrix composition capable of adhesive flow under preselected conditions of heat and pressure.
3. The system of claim 2, wherein said plasticizer is incorporated in said polymeric matrix composition.
4. The system of claim 2, wherein said plasticizer is disposed in said separator member.
5. The system of claim 1, wherein said matted fiber paper is selected from the group consisting of single-layer and multi-layer sheet products comprising cellulose, regenerated cellulose, composite cellulose fibers, and mixtures thereof.
6. The system of claim 1, wherein said polymeric matrix composition is selected from the group consisting of polymers and copolymer combinations of vinylidene fluoride, hexafluoropropylene, chlorotrifluoroethylene, tetrafluoroethylene, vinyl fluoride, vinyl chloride, vinyl acetate, styrene, and acrylonitrile.

7. The system of claim 2, wherein said plasticizer is selected from the group consisting of propylene carbonate and mixtures thereof with ethylene carbonate and butylene carbonate, butyl adipate, cellosolve acetate, dimethyl ethers of diethylene glycol and triethylene glycol, and mixtures thereof.

8. A method of making an electrochemical cell system comprising the steps of :
providing a pair of opposed planar electrode members composed of a polymeric matrix composition;
providing a planar matted fiber paper separator member interposed between said pair of electrode members; and
laminating said electrode and separator members together to form a unitary cell structure.

9. The method of claim 8 wherein step of providing said electrode members comprises providing electrode members composed of a polymeric matrix composition selected from the group consisting of polymers and copolymer combinations of vinylidene fluoride, hexafluoropropylene, chlorotrifluoroethylene, tetrafluoroethylene, vinyl fluoride, vinyl chloride, vinyl acetate, styrene, and acrylonitrile.

10. The method of claim 8 wherein said step of providing said separator member comprises providing a separator member of said matted fiber paper selected from the group consisting of single- and multi-layer sheet products comprising cellulose, regenerated cellulose, composite cellulose fibers, and mixtures thereof.

11. The method of claim 8, further comprising the steps of: providing a sufficient amount of a plasticizer compatible with said polymeric matrix composition to lower the inherent flow temperature of said polymeric matrix composition and render said polymeric matrix composition capable of adhesive flow under preselected conditions of heat and pressure; and said step of laminating comprises applying said preselected conditions of heat and pressure to said electrode and separator members.

12. The method of claim 11 wherein said step of providing a plasticizer comprises providing a plasticizer selected from the group consisting of propylene carbonate and mixtures thereof with ethylene carbonate and butylene carbonate, butyl adipate, cellosolve acetate, dimethyl ethers of diethylene glycol and triethylene glycol, and mixtures of the foregoing.

13. The method of claim 11, wherein the step of providing said plasticizer comprises incorporating said plasticizer in said polymeric matrix composition.

14. The method of claim 11, wherein the step of providing said plasticizer comprises disposing said plasticizer in said separator member.

15. The method of claim 11 wherein said step of laminating comprises applying said preselected conditions of heat and pressure by means of a heated roller apparatus.

16. The method of claim 11 wherein said preselected condition of heat is in the range of about 100°C-140°C and said preselected condition of pressure is in the range of 20-40 N/cm.

17. The method of claim 11, wherein following said step of laminating, further comprising the step of removing said plasticizer.

18. The method of claim 17 wherein said step of removing comprises removing said plasticizer by selective extraction with a solvent exhibiting negligible solvency toward said polymeric matrix composition.

19. The method of claim 17 wherein said step of removing comprises removing said plasticizer by evaporation.